UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

COVER CROP

(Acre)

CODE 340

DEFINITION

Grasses, legumes, forbs, or other herbaceous plants established for seasonal cover and conservation purposes.

PURPOSES

- Reduce erosion from wind and water
- Increase soil organic matter
- Manage excess nutrients in the soil profile
- Promote biological nitrogen fixation
- Increase biodiversity
- Weed suppression
- Provide supplemental forage
- Soil moisture management

CONDITIONS WHERE PRACTICE APPLIES

On all lands requiring vegetative cover for natural resource protection

CRITERIA

General Criteria Applicable To All Purposes

Seedbeds may be prepared conventionally by disking and/or chiseling once or twice, smoothing with a harrow or field cultivator, then planting, either by drilling or broadcast. Cover crops may also be no-till seeded by the use of a no-till drill. Aerial seeding may be done prior to leaf drop of the preceding crop.

Lime and fertilizer shall be applied according NRCS Conservation Practice Standard, Nutrient Management 590.

Use Table 1 to select plant species, seeding rates, planting dates and planting depths.

Cover crops shall be terminated by harvest, frost, mowing, rolling, tillage, and/or herbicides in preparation for the following crop.

Herbicides used with cover crops shall be compatible with the following crop to be planted. Apply pesticides according to NRCS Conservation Practice Standard 595.

Cover crop residue shall not be burned.

Additional Criteria to Reduce Erosion From Wind and Water

Cover crop establishment, in conjunction with other practices, will be timed so that the soil will be adequately protected during the critical erosion period(s).

Select plant species for cover crops that will provide quick growth to provide adequate erosion protection.

The amount of surface and/or canopy cover needed from the cover crop shall be determined using current erosion prediction technology.

Additional Criteria to Increase Soil Organic Matter

Select a cover crop species that produces high volumes of organic material to maintain or improve soil organic matter.

The NRCS Soil Conditioning Index (SCI) procedure will be used to determine the amount of biomass required.

NRCS, Alabama
June 2002

The cover crop will be terminated as late as feasible to maximize plant biomass and still allow for the timely preparation of the seedbed for the subsequent crop.

Additional Criteria to Manage Excess Nutrients in the Soil Profile

Cover crops shall be established and actively growing before expected periods of high precipitation that can cause leaching.

Cover crop species shall be selected for their ability to absorb large amounts of nutrients from the rooting profile of the soil.

The aboveground biomass shall be removed from the field for maximum nutrient removal efficiency.

Additional Criteria to Promote Biological Nitrogen Fixation

The specific Rhizobia bacteria shall either be present in the soil or the seed will be inoculated at the time of planting legumes.

Nitrogen credits from legume cover crops shall be accounted for in the nutrient management plan.

Additional Criteria to Increase Biodiversity

Cover crop species shall be selected that have different maturity dates, attract beneficial insects, serve as a trap crop for damaging insects, and/or provide food and cover for wildlife habitat management.

Additional Criteria for Weed Suppression

Cover crop species shall be selected for their chemical or physical competition with weeds.

Cover crop residues shall be left on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.

For long-term weed suppression, perennials and/or biennial species can be used.

Additional Criteria to Provide Supplemental Forage

Species selected shall have desired forage traits and not interfere with the production of the subsequent crop.

Forage provided by the cover crop may be hayed or grazed as long as sufficient biomass is left for resource protection.

Additional Criteria for Soil Moisture Management

Terminate growth of the cover crop sufficiently early to conserve soil moisture for the subsequent crop.

Cover crops established for moisture conservation shall be left on the soil surface until the subsequent crop is planted and throughout the growing season.

In areas of potential excess soil moisture, allow the cover crop to grow as long as possible to optimize soil moisture removal.

CONSIDERATIONS

The cover crop should be terminated as late as feasible to maximize plant growth and still prepare the seedbed for the subsequent crop.

Deep-rooted species provide maximum nutrient recovery.

Consider that grasses utilize more soil nitrogen, and legumes utilize both nitrogen and phosphorus.

Avoid cover crop species that attract potentially damaging insects.

Consider conservation tillage as an alternative to plowing and/or disking.

Use of NRCS Conservation Practice Standards, Residue Management 329A, 329B, 329C, and/or 344 will reduce erosion from wind and water.

Cover crops may be used to improve site conditions for establishment of perennial species.

Consider selecting cover crop species that have wildlife benefits.

Follow NRCS state policy for considering cultural resources during planning and maintenance.

PLANS AND SPECIFICATIONS

Specifications for the use and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operations and Maintenance described in this standard. Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

The operation and maintenance of this practice will be in accordance with the conservation plan.

Cover crops shall not be terminated until 45 or less days of the planting the succeeding crop.

Control weeds in the cover crop by mowing or herbicide application.

REFERENCES

Alabama Cooperative Extension System Circular ANR-149. *Alabama Planting Guide for Forage Grasses.*

Alabama Cooperative Extension System Circular ANR-150. *Alabama Planting Guide for Forage Legumes.*

Southern Forages. Ball, D., Hoveland, C., and Lacefield, G.

Managing Cover Crops Profitably, Second Edition. Sustainable Agriculture Network. National Agricultural Library.

NRCS Conservation Practice Standards, 590, 595, 329A, 329B, 329C,and 344.

Revised Universal Soil Loss Equation, Section 1, Field Office Technical Guide.

TABLE 1. PLANTS COMMONLY USED FOR COVER CROPS IN ALABAMA

Forage Crop	Seeding Rate (lb/A)	Seeding Depth (in.)	Planting Date			Remarks
			North	Central	South	
Warm Season Annual Grasses						
Millet, Browntop, Proso, & Foxtail	Drill 20 B-Cast 30	½ - ¾	May 1–Aug 1	Apr 1-Aug 15	Apr 1-Aug15	Well drained, productive soils.
Millet, Pearl	Drill 15 B-Cast 30	½ - 1½	Apr 20-Jul 1	Apr 15-Jul 1	Apr 1-Jul 15	Adapted to clay and loam soils with good summer moisture. Avoid calcareous Black Belt soils.
Sorghum-Sudan Hybrids	Drill 25 B-Cast 35	½ - 1	May 1–Aug 1	Apr 15-Aug 1	Apr 1–Aug 15	Well drained, productive soils.
Sorghum, Forage	Rows 5 B-Cast 20	1	Apr 20-May 15	Apr 20-May 15	Apr 20-Jul 1	Well drained, productive soils.
Sudangrass	Drill 25 B-Cast 35	½ - 1	May 1-Aug 1	May 1-Aug 1	May 1-Aug 1	Light sandy to heavy clay soils.
Cool Season Annual Grasses						
Ryegrass	25	0 – ½	Aug 25-Oct 1	Sep 1–Oct 15	Sep 15–Nov 1	Best adapted to clay loam soils.
Small Grains (Oats, Rye, Wheat, Barley, Triticale)	90-120	1 – 2	Sep 1–Nov 1	Sep 15–Nov 1	Sep 15-Nov 15	Rye is better adapted to well drained, sandy to loam soil and is more tolerant of soil acidity than wheat or oats; Oats are cold sensitive & subject of winter kill, especially in the northern half of Alabama; Wheat more tolerant of heavy wet soils.

Table 1 (cont.) Plants Commonly Used for Cover Crops in Alabama

Forage Crop	Seeding Rate (lb/A)	Seeding Depth (in.)	Planting Date			Remarks
			North	Central	South	
Warm Season Annual Legumes						
Lespedeza, Annual	30	¼ - ½	Feb 15-Apr 1	Feb 15-Apr 1	-	Needs good drainage; tolerant of drought; low fertility and soil acidity. Avoid lime soils of Black Belt.
Cool Season Annual Legumes						
Austrian Winter Peas	40	1-2	Sept 1-Oct 15	Sept 1-Oct	Sept 1-Oct 15	Best on well drained soils.
Caley Peas	50	½ - 1	Sep 1-Oct 15	Sep 1-Oct 15	Sep 1-Oct 15	Adapted to alkaline and moderately acid Black Belt soil. Seeds are toxic.
Clover, Arrowleaf	6	0 – ½	Aug 25-Oct 1	Sep 1–Oct 15	Sep 15–Nov 1	Overseed 5 weeks later. Best on well drained soils. Avoid Black Belt soils.
Clover, Ball	4	0 – ¼	Sep 1-Oct 31	Sep 1-Oct 31	Sep 1-Oct 31	Adapted to most soils. Reseeds well and tolerates wet soils and flooding.
Clover, Crimson	25	0 – ½	Aug 25-Oct 1	Sep 1–Oct 15	Sep 15–Nov 1	Avoid high pH soils. Best on well drained soils. Overseed 5 weeks later.
Clover, Red	Drill 8 B-Cast 15	¼ - ½	Sep 15-Nov 15 Or Feb 1-Apr 1	Sep 15-Nov 15 Or Feb 1-Apr 1	Sep 15-Nov 15 -	Fertile, well drained soils.

Table 1 (cont.) Plants Commonly Used for Cover Crops in Alabama

Forage Crop	Seeding Rate (lb/A)	Seeding Depth (in.)	Planting Date			Remarks
			North	Central	South	
Clover, Subterranean	10	¼ - ½	Aug 25-Oct 1	Sep1-Oct 31	Sep1-Oct 31	Best on well drained, productive soils.
Vetch, Common	35	1-2	--	Sep 1-Oct 15	Sep 15-Nov 1	Best on well drained soils. Certain varieties can freeze if planted late, especially in north Alabama. Nova II is the least cold tolerant.
Vetch, Hairy	25	1-2	Sep 1 –Oct 15	Sep 1-Oct 15	Sep 15-Nov 1	Best on well drained soils.

NOTES:

A. Drill = Drilled and B-Cast = Broadcast.

B. Where legumes are seeded with grasses, use the seeding dates for the grasses.

C. Where two or more grasses are used in a mixture, reduce the seeding rate of each by about one-third. Do not reduce the seeding rates of legumes when used in the mixtures.

D. Seeding rates should be increased at least 30% when aerially seeded.

E. Seeding rates for a cost-share program shall be the rate specified by the program.

GEOGRAPHICAL AREAS FOR SPECIES ADAPTATION AND SEEDING DATES

NRCS, Alabama
June 2002